

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

160

INSTRUCTIONS

FOR RESEARCH RELATIVE TO THE

ETHNOLOGY AND PHILOLOGY

OF

AMERICA.

PREPARED FOR THE SMITHSONIAN INSTITUTION.

BY

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CONTENTS.

<u>INTRODUCTORY REMARKS</u>	<u>1</u>
<u>ETHNOLOGY</u>	<u>2</u>
<u>Crania</u>	<u>2</u>
<u>Specimens of art, etc.</u>	<u>4</u>
Hints for Ethnological inquiry	7
<u>PHILOLOGY</u>	<u>13</u>
<u>Introductory remarks</u>	<u>13</u>
<u>Orthography</u>	<u>17</u>
<u>Vowels</u>	<u>18</u>
<u>Consonants</u>	<u>18</u>
<u>Comparative vocabulary</u>	<u>20</u>

INSTRUCTIONS
RELATIVE TO THE
ETHNOLOGY AND PHILOLOGY
OF AMERICA.

INTRODUCTORY REMARKS.

THE Smithsonian Institution is desirous of extending and completing its collections of facts and materials relative to the Ethnology, Archæology, and Philology of the races of mankind inhabiting, either now or at any previous period, the continent of America, and earnestly solicits the coöperation in this object of all officers of the United States government, and travellers, or residents who may have it in their power to render any assistance.

JOSEPH HENRY,
Secretary S. I.

SMITHSONIAN INSTITUTION,
WASHINGTON, March 1, 1863.

ETHNOLOGY.

CRANIA.—Among the first of the desiderata of the Smithsonian Institution, is a full series of the skulls of American Indians.

The jealousy with which they guard the remains of their friends renders such a collection in most cases a difficult task, but there are others in which these objects can be procured without offence. Numerous tribes have become extinct, or have removed from their former abodes; the victims of war are often left where they fall; and the bones of the friendless and of slaves are neglected. Where, without offence to the living, acquisitions of this kind can be made, they will be gladly received as an important contribution to our knowledge of the race.

Various methods of disposing of the dead have prevailed among different tribes, as burning, burial, deposit in caves, in lodges, beneath piles of stone, and in wooden sepulchres erected above-ground, placing on scaffolds or in canoes, and attaching to the trunks of trees. In many instances the bones, after a season, are collected together and brought into a common cemetery. Where the first-mentioned form, that of burning, is followed, we must, of course, look to chance for the preservation of the remains. This method is, however, more rare than the others.

It is requisite, for the purpose of arriving at particular results, that the most positive determination be made of the nation or tribe to which a skull belongs. In extensive prairie countries, hunted over or traversed by various tribes, or where, as on the Pacific coast, several tribes and even stocks inhabit a district of limited extent, this is often difficult, or even impossible. Unless, therefore, information of a direct nature is obtained, the collector should be guarded in assigning absolute nationality to his specimens. It will be better to state accurately the locality whence they are derived, and the owners or frequenters of the neighborhood, to one of which they are likely to belong. Where several specimens are collected, each should be numbered to correspond with a catalogue in which the above points are mentioned; as also whether it was found in a grave or other place of deposit,

the character of the ornaments and utensils placed with it, and whether it was in its original place or had been combined with others. Finally, it should be ascertained whether the tomb was that of existing or recent inhabitants of the country, or of more ancient date,—such, for example, as the mound-builders of the Ohio; and, in this latter case, if the remains are those of the original inhabitant, or have been since deposited. In this inquiry the character of the articles buried with the body will often furnish a clue. The same precaution should be adopted where tribes have been removed from their native regions to a different locality. In short, where any doubt exists in the mind of the collector, all those circumstances should be examined into which in the absence of direct testimony, will facilitate a conclusion as to origin.

It may be mentioned in this connection, that among some nations, it is the custom to marry out of the tribe, as a matter of policy. Skulls of women found in the cemeteries of one of these might therefore very probably belong to an adjoining tribe, and, possibly, to one of an entirely different stock. In such cases, too, there can be no certainty that the men themselves are of the pure blood of one race, and it is, therefore, important to ascertain if this custom exists. Among those tribes where flattening or altering the head is common to *both* sexes, particular suspicion should attach to any having the skull unaltered. This process is usually a mark of rank, or at least of freedom, and an unaltered skull, if found in a burial-place or well-marked receptacle, may almost be assumed to be that of a stranger; if neglected, it is probably that of a slave. But as slaves were often buried with their owners, even this is not a positive conclusion. Among some of the Pacific tribes, however, compression of the head is confined to females, or is, at any rate, only carried to any considerable extent among them. Slaves are sometimes of the same tribe with their owners, but they are more frequently purchased from others; and it should be noted that on the Pacific the course of the trade has been from south to north.

In order to ascertain whether differences of form exist among different stocks, the accumulation of as many specimens as possible of each tribe is desirable, and duplicates moreover afford the means of extending the collection by exchange.

Skulls which have been altered in shape possess a certain interest in themselves, though they are in other respects disadvantageous for comparison. The practice, in different forms, formerly existed more widely than at present, several tribes in the southern States, as the Natchez, &c., having been addicted to it. Two methods are still

employed in North America: that of flattening the head by pressure on the forehead, as practised among the Chinooks and other tribes in Oregon and Washington Territory, and that of elongating it, peculiar to a few on the northern end of Vancouver island.

SPECIMENS OF ART, ETC.—Another department to which the Institution wishes to direct the attention of collectors, is that of the weapons, implements, and utensils, the various manufactures, ornaments, dresses, &c., of the Indian tribes.

Such a collection may naturally be arranged under three periods. The first, that of the races which had already passed away before the discovery of the continent by Europeans, or whose extinction may be considered as coeval with that event; next, of the tribes who have disappeared with the settlement of the Atlantic States and the country between the Alleghanies and the Mississippi; and finally, that of the present time, or that of the yet existing nations, confined to the northern and western portions of the continent and to Mexico.

It is among the last that the greatest variety exists, and of which it is especially important to make immediate collections, as many articles are of a perishable nature, and the tribes themselves are passing away or exchanging their own manufactures for those of the white race. It is hardly necessary to specify any as of particular interest, for almost every thing has its value in giving completeness to a collection. Among the most noticeable, however, are dresses and ornaments, bows and arrows, lances, war-clubs, knives, and weapons of all kinds, saddles with their furniture, models of lodges, parflech packing covers and bags, cradles, mats, baskets of all sorts, gambling implements, models of canoes (as nearly as possible in their true proportions), paddles, fish-hooks and nets, fish-spears and gigs, pottery, pipes, the carvings in wood and stone of the Pacific coast Indians, and the wax and clay models of those of Mexico, tools used in dressing skins and in other manufactures, metates or stone mortars, &c., &c.

In making these collections, care should be taken to specify the tribes from which they are obtained, and where any doubt may exist, the particular use to which each is applied. Thus, for instance, among the Californians, one form of basket is used for holding water; another for sweeping the seeds from various plants and grasses; a third, as their receptacle during the process of collection; a fourth, for storage; still another, in which to pound the seeds; again, one to boil the porridge made from the flour; and finally, others as dishes from which the preparation is eaten. It will also be desirable to ascertain the Indian names given to each article.

Of the second class, the remains are also numerous, and are scattered through all the States east of the Mississippi, in the form of axes, arrow-heads, sinkers for nets, fleshing chisels, and other implements of stone, and in some cases fragments of rude pottery.

To the first class belong the only *antiquities* of America, and these are of various descriptions. They include the tools found in the northern copper-mines; the articles inclosed in the mounds of Ohio and elsewhere; the images common in Kentucky and Tennessee, indicating, among other things, the worship of the Phallus; pottery, the fragments of which are abundant in Florida, the Gulf States, and on the Gila, connecting an extinct with an existing art; and especially those specimens frequently disinterred in the Mexican States, belonging to the era of Aztec or Toltecan civilization. It is especially important to ascertain the antiquity of these by careful observation of the circumstances under which they are discovered, in order not to confound ancient with modern utensils.

To this class also belong those articles found under conditions which connect archæology with geology, and which may be classed as follows:

1. The contents of shell beds of ancient date found on the sea-coasts and bays, often deeply covered with soil and overgrown with trees; among which, besides the shells themselves, implements of stone, bones of fish, animals, and birds used for food, are frequently met with. The examination of these collections in Denmark and other countries of northern Europe has led to the discovery of remains belonging to a period when a people having no other implements than those of stone or bone occupied the coast prior to the settlement there of the present race. It is possible that a similar investigation in America may carry us back to a very remote period in aboriginal history.

2. Human remains, or implements of human manufacture, bones of animals bearing the marks of tools or of subjection to fire, found in caves beneath deposits of earth, and more especially of stalagmite or stony material formed by droppings from the roof.

3. Spear and arrow heads, or other weapons, and evidences of fire discovered in connection with bones of extinct animals, such as the mammoth, fossil elephant, &c., among superficial deposits, such as salt-licks, &c.

4. Implements of the same description found in deposits of sand and gravel, or other like material, exposed in bluffs or steep banks, such as have recently attracted the attention of European geologists.

In all these cases the utmost care should be taken to ascertain with

absolute certainty the true relations of these objects. In the case of the shell-banks, the largest trees, where any exist, should, if practicable, be cut down and the annual rings counted. Next, the depth of the superincumbent deposit of earth should be measured, and its character noted, whether of gravel, sand, or decomposed vegetable matter; as also whether it has been stratified by the action of water. Next, the thickness of the shell-bed should be ascertained, and the height of its base above present high-water mark; as also whether it exhibit any marks of stratification. Finally, the face of the bed having been uncovered, a thorough examination should be made, commencing at the top and carefully preserving all objects which exhibits signs of human art, and noting the depth in the deposit at which they were discovered. Specimens of each species of shell should be collected, and all bones or fragments of them saved. Evidences of the use of fire should be watched for and recorded.

In the search of caverns, the same system should be followed. First, the floor should be inspected for any recent remains either of men or animals; next, the superficial earth should be carefully removed over a considerable space and thoroughly examined at various depths, the results, if any, being kept separate, and marked accordingly. Where a stalagmitic deposit, such as is common in limestone caverns, forms the floor, it must be broken up and its thickness measured. The underlying materials should then be cautiously removed and sorted over, each layer being kept by itself; and where any remains are discovered, the utmost precaution should be taken to determine their actual circumstances. If, for instance, they are bones of men, it should be ascertained whether the skeleton is entire and in a natural position, indicative of having been buried there, or scattered, as also its position relative to any other remains, whether under or over them; if of animals, whether they exhibit the marks of tools, and above all, evidences of the employment of fire. Every fragment of bone or other evidence of animal life should be preserved and marked with the order of its succession in depth.

The same precautions should be taken in the other cases mentioned, the conditions under which the objects are found, and the depth and character of covering of each being noted, and full sets of specimens sent for examination.

Besides collecting the articles heretofore mentioned, persons able to make the investigations, are invited to report the information sought in the following paper prepared by the late Prof. W. W. Turner.

HINTS FOR ETHNOLOGICAL INQUIRY.

Inquiries of this description have the two-fold object of ascertaining the present condition of these tribes and their past history. Although both branches of the investigation have of course a mutual bearing upon each other, yet the former has more of a practical, the latter more of a scientific character; the former is comparatively easy, the latter environed with difficulties. In examining into the numbers, physical and mental characteristics, and actual condition of the Indian tribes, we are accumulating data for beneficent, legislative, and philanthropic action in their behalf. The work, moreover, is a mere matter of observation, to be accomplished with the requisite expenditure of time and labor to almost any degree of minute accuracy that may be desired. On the contrary, any reliable knowledge of ante-Columbian events, that is now attainable, can, from the nature of things, be only general in its character, and the fruit of laborious induction from the comparison of many diverse particulars. As none of the tribes of this continent, not even the most advanced, ever arrived at the grand and fruitful idea of an alphabetic character for commemorating their thoughts and deeds, almost their entire history previous to the advent of Europeans is left a mysterious blank. To ascertain, if possible, the origin of the aboriginal population of this portion of our globe, to trace the migrations and conquests of the various nations that composed it from one part of the continent to another, to disclose their superstitions, their manners and customs, their knowledge of the arts of war and peace—in short, to place before us a moving panorama of America in the olden time—such is the purpose which the scientific ethnologist has in view, and to accomplish which he neglects no source of information that promises to cast even a single ray of light into the obscurity with which the subject is surrounded.

Names of tribes.—In addition to the name by which a tribe calls itself, it is desirable to ascertain those which are given to it by surrounding tribes, together with the literal meaning of each name.

Geographical position.—Give as accurately as may be the size of the territory, whether mainland or island, belonging to each tribe; its climate, soil, and general character; also its animal, vegetable, and mineral productions.

Number.—What is the number of individuals in the tribe? State, if you can, the number of adult males, females, and children respec-

tively. Has the number of the tribe increased or diminished to any remarkable extent; and if so, to what cause is the change owing?

Physical constitution.—It is essential to notice the general stature of the people, the form of their bodies generally, and the proportions of their limbs; the form of the skull and the facial angle; the features; have these any thing which distinguishes them from other people? What are the color and texture of their skin and hair? What beard have they? What is the color of their eyes? Are they generally handsome or ugly? Have they much or but little muscular strength? Are they remarkable for the peculiar perfection of any of their organs, as that of sight, of hearing, of smelling; or for any corporeal faculties, as speed in running, facility of climbing, of diving and remaining long under water, or for nimbleness and dexterity, or the reverse? What is the ordinary duration of life among them? It is highly desirable, also, that photographs should be taken of individuals of each tribe.

Picture-writing, etc.—A full description is desirable of any modes that the natives may practise of recording events or communicating ideas by sensible signs, especially paintings or picture-writings, however rude, whether on pieces of bark or skin, on their dwellings or implements, on rocks, &c. When the object itself containing the record cannot be secured and brought away, exact drawings of the figures should be taken, colored after the originals. Every circumstance respecting the locality and people among whom found should be noted down, together with the interpretations of the natives (endeavoring in all cases to have the independent testimony of more than one), when attainable.

Dress.—State the materials, colors, and fashion of their dresses and ornaments. Do they paint themselves; and if so, with what materials? Do they paint variously on different occasions, as on festivals and before going to war? Give specimens of the figures they employ, especially of any that may be distinctive of the tribe or band. The same of tattooing, if practised. Some tribes of the northwest make large incisions in the under lip, others flatten the heads of their infants by compression; all such things should be observed and accurately noted respecting each tribe.

Food.—Describe the materials of which it consists, with the mode of procuring it, as by hunting, fishing, collecting roots, berries, &c. Do they practise agriculture at all; if so, to what extent; and what grains, roots, etc., do they cultivate? Do they rear any domestic animals? Do they make any stimulating drinks of their own; and are they fond of tobacco or any other narcotic?

Dwellings.—Are these permanent or movable; of what materials are they constructed, and how? Are they entirely above or partially under ground; what is their interior arrangement? Drawings of both exteriors and interiors should be made, so as to give an accurate idea of their peculiarities. On whom does the labor of construction fall, the men or the women; and in case of migration, is the entire structure removed, or only the outside covering? When a number of dwellings are placed near each other, as when a tribe encamp together on a spot, is any regular mode of arrangement observed? Have they any buildings set apart for public purposes, as business, amusement, or worship; and how are they constructed?

Arts.—An exceedingly interesting branch of inquiry, and one too often overlooked or but imperfectly attended to by travellers, is presented to us in the primitive industrial arts of the aborigines. Of what materials is the pottery composed; is any of it turned on a wheel; how are the materials compounded; is the ware burned completely or partially; is it glazed or not? How is it ornamented? Have they any utensils of stone; and if so, what is the material? Of what materials are their arrow and spear heads manufactured, and what is the process? Are there individuals whose business it is to make them? Do they make any articles of metal; and if so, of what metals, and what is their mode of working them? How and by what means do they produce fire? Their modes of spinning, weaving, and dyeing, and the materials and implements used, are of great interest. What are their modes of trapping animals and taking fish; and how are their implements for these purposes constructed? Do they still retain the bow and arrow, or have they wholly or partially abandoned them for the use of firearms? The construction and mode of using all their implements should be described, and complete collections made of them. Their performances, too, in the way of what may be called the fine arts, merit attention; such as their drawings and paintings on smooth rocks or the barks of trees, or their vessels, their dwellings, etc.; and their carvings in wood and stone, as on pipe-bowls, paddles, bows, etc., etc. If native melodies should be discovered among them, they should by all means be noted down, together with the words sung with them.

Trade.—Do they carry on any traffic with each other, or with the whites? If so, of what articles does it consist, and how is it conducted? Have they any common standard of value which approaches the nature of money?

Religion.—What is the nature of their religious belief, as far as it

can be ascertained? What are the objects of their worship? Have they any idea of a Creator of all things; and do they give any account of the creation? Do they worship the sun, fire, or the serpent? What becomes of men and animals after death? Are there any persons of the character of priests set apart for the performance of religious ceremonies? If so, how are they supported, and in what general estimation are they held? Have they a sacred fire, and is it kept perpetually burning?

Government.—Is the tribe commanded by the same chief or chiefs in peace and in war, or by different ones? What is the extent of a chief's authority; and how does he acquire it, by birth or by the choice of the people? What are the insignia of his office, and what his privileges? Who are entitled to speak in the councils of the tribe? What laws have they; for instance, what are the punishments for theft, for adultery, for murder; and by whom are punishments inflicted?

Social life.—Is slavery known among them? Is female chastity prized? What is the treatment of women by their husbands; of children by their parents? What is the division of labor between husband and wife? What festivals have they? enumerate them by their native names, and describe their import, and the manner in which they are celebrated. What ceremonies do they observe at births, marriages, and funerals? Are women obliged to live apart during their monthly terms, or after giving birth to a child? At what age do marriages take place, and what degrees of consanguinity are prohibited? May a man marry into the same band or tribe to which he belongs, or must he go to another for a wife? Do children belong to the tribe of the father or of the mother? Is polygamy practised? Do the several wives stand on a footing of equality, or is one superior to the rest; and if so, why? How is the body disposed of after death; and what articles, if any, are buried with it?

War.—Do the warriors array themselves in a peculiar attire and join in the war-dance before setting out? What are their weapons? What is their treatment of captives, especially if females? Do they practise scalping, and shave their own heads, all but the scalp-lock?

Medicine.—Are there any persons in the tribe whose profession it is to practise the cure of diseases, or is this a part of the business of the priest, or so-called "medicine-man?" What is their mode of treating the principal complaints? Do they practise blood-letting, tooth-pulling, or any other surgical operations? What plants do they use as remedies, and for what complaints is each one applied? It is

hardly necessary to say that collections of such plants and their seeds should be made for cultivation and experiment at home.

Literature.—Have they any thing partaking of the nature of a literature among them; that is, have they any songs, tales, fables, and especially any historical legends? If they have, an endeavor should be made to record and preserve them; not so much for the information they may directly convey, as for the insight they must necessarily afford into the mental idiosyncrasy of the people. If there is any one capable of writing the language, it is much to be wished that these things should be set down in the original words, as well as an English translation.

If the Indians, like many tribes in the older States, use pictorial images for the purpose of recalling to memory the themes and general tenor of their songs, &c., specimens should be collected and delineated, and accompanied by copies of the documents they are intended to illustrate.

Calendar and Astronomy.—What divisions of time are in use among the Indians? How many days do they reckon to a month, and how many months to the year? What names are given to these days, and to the months; and what are the literal meanings of the names? Have they any length of the natural year? What names do they give to individual stars and constellations, particularly to those of the zodiac; and how do they account for eclipses? How do they ascertain and name the points of the compass? Have they any theory respecting the nature and motions of the stars, and respecting the causes of wind, rain, hail, snow, thunder, &c.?

History.—Have the tribe, as far as their knowledge extends, always lived on their present territory; if not, from what direction did they come, and to what other tribes do they state themselves to be related? What changes have been introduced among them by intercourse with the whites? With what tribes have they been, and are they now, at war? Give the name of their principal chief, and of any other eminent men among them, and of their predecessors, as far as they are remembered.

Antiquities.—Earthworks, of various forms and dimensions, and for various purposes, as for defence against enemies, for watch-towers, for funeral monuments, have been found in great numbers in the valley of the Mississippi and elsewhere; and an examination of their structure and contents has disclosed a variety of the most interesting facts respecting the races that erected them. If time and opportunity be afforded of properly examining one of them, it is highly desirable that

it should be done. When a mound is opened, every particular respecting its position, size, form, and structure, should be noted down on the spot, the description being assisted by drawings of the ground-plan and elevation; and an accurate list should be taken of all the articles found in it. Such as are taken should be properly labelled, and kept by themselves, with the same care that is observed with respect to objects of natural history. When, however, the work cannot be thoroughly done, it is better to leave the mound unopened for a more favorable opportunity.

PHILOLOGY.

IN view of the importance of a uniform system in collecting words of the various Indian languages of North America, adapted to the use of officers of the government, travellers, and others, the following is recommended as a **STANDARD VOCABULARY**. It is mainly the one prepared by the late Hon. Albert Gallatin, with a few changes made by Mr. Hale, the Ethnologist of the United States Exploring Expedition, and is adopted as that upon which nearly all the collections hitherto made for the purpose of comparison have been based. For the purpose of ascertaining the more obvious relations between the various members of existing families, this number is deemed sufficient. The remote affinities must be sought in a wider research, demanding a degree of acquaintance with their languages beyond the reach of transient visitors.

The languages spoken within the limits of the United States, in which the greatest deficiencies exist, are those of the tribes comprised in the States of California and Texas, and the Territories of Utah, Nevada, and New Mexico, and to these attention is particularly directed. It is not intended, however, to confine the collection to the languages of the United States. Those of British and Russian America and of Mexico, particularly the western coast, fall within the purpose of this circular; and the alphabet may, in fact, with certain local adaptations, be used in any region.

Some of the words contained in it will of course be found inapplicable in particular sections of the country; as, for example, ice, salmon, and sturgeon among the southern tribes, buffalo among the coast tribes of the Pacific, and such should at once be omitted.

Where several languages are obtained by the same person in one district, the inquirer may substitute for these the names of familiar things, taking care that the same are carried through them all, and that they are those of native and not imported objects. Such words as coat, hat, etc., are of course useless for purposes of comparison, unless it is explained that they refer to the dress of deer-skin, the hat of basket-work used by the natives, and of their own primitive manufacture.

As the languages of savage nations, being unwritten and without fixed standard, are subject to constant change, the number of dialects is everywhere considerable. The collector is therefore recommended to obtain vocabularies in each dialect; and for the greater certainty, to employ one of those already collected, on the correctness of which reliance can be placed, as the medium of obtaining others.

Whenever leisure and opportunity offer for the collection of larger vocabularies than that, here given, it will of course be desirable to procure them; as also information concerning the grammatical structure of the language, such as the modes of forming the plurals in nouns and adjectives, their declension, the conjugation of verbs, the character and use of pronouns, the number and employment of adverbs, prepositions, &c. Grammars and dictionaries, never yet published, were made of many of the languages of Upper and Lower California and the Mexican States by the Spanish missionaries, and the Smithsonian Institution has been favored with the loan of several manuscripts which are in the course of publication. It is desired to procure others, or copies of them, whenever it is possible, from all parts of both the American continents, or of printed works on the same subject. The present form is issued for the use of travellers or merely transient residents among tribes where no such records are procurable.

In making collections, the utmost care is requisite to represent accurately the sounds of unfamiliar languages, particularly those which to us appear uncouth; and the inquirer should satisfy himself, by repetition of the words to other individuals, that he has correctly acquired their pronunciation. While the assistance of interpreters conversant with the language is desirable to insure a correct understanding, the words themselves should be taken down from the lips of an Indian of the tribe. A great difference indeed exists among Indians in the purity with which they speak their own language, chiefs and men of note and women of good standing, as a general thing, speaking more correctly than common persons. Great patience is necessary to secure accuracy, as their attention soon becomes fatigued by being kept on the stretch. Whenever this is observed to be the case, it is best to postpone the subject for a time, if possible.

The character of the Indian mind is so essentially different from that of the white man, they think in so different a manner, that many precautions are necessary to avoid giving them wrong impressions of our meaning, and of course obtaining incorrect replies.

Indians not only distinguish by different names the degrees and

modifications of relationship, such as the elder from the younger brother and sister, but women use different words from men in addressing their relations; as, for instance, a man employs one word in saying "my father," and a woman another. Again, different words are, at least in some languages, used in speaking *of* one's parents from those used in speaking *to* them. It is, therefore, necessary either to give each form, or to specify by what sex and in what sense the words are used. Further to prevent uncertainty, it is preferable to employ the possessive pronoun in connection with the word, as given in the vocabulary, *e. g.*, "my father," &c.; and this is, in fact, in consonance with Indian practice.

Their languages are deficient in *generic* terms, or those representing classes of objects. Thus very few possess words equivalent to "tree," "bird," "fish," &c., though names will be found for every particular species, as each kind of oak and pine, of duck or salmon; and of certain animals, such as deer, there will be found, besides the specific name, black or white-tailed deer, as the case may be, separate words signifying buck, doe, and fawn, as with us. It is, therefore, essential in obtaining such names, to ascertain definitively the object intended, and to note this in the vocabulary.

This tendency to particularize extends to almost every class of objects. In regard to parts of the body, it has been found that in many languages there is no one word for arm or leg, but separate ones for the upper arm, and that below the elbow; for the thigh, and that part below the knee. Even of the hands and feet there are often no names embracing the whole. So, too, the words "leaf," "bark," are represented by distinct names, according to their character, as broad and needle-shaped leaves, the woody and fibrous barks. Sheath and pocket knives and the various forms of canoes have in like manner each their specific names.

In respect to particular words, the following points may be noted:

Man. This must be carefully distinguished from the word "person," the collective of which is "people," *i. e.*, Indians.

Boy, Girl, Infant. The answer often given for these is simply "little man," "little woman," "little one."

Husband and wife. Distinct words exist in most languages for these relationships; in others, it would seem as if there was only "my man," "my woman."

Indians, people. Care must be taken that the name of the tribe is not given unless really so designated.

Head. A very common mistake to be guarded against is the substitution of hair or scalp.

Face. The name for the forehead or eyes is, in some cases, employed for the whole face.

Neck. Throat is apt to be given instead of neck.

In naming parts of the body, as well as relationship, it will be found a very common practice with Indians to prefix the pronoun "my" to each one, as "my head," &c. The recurrence of the same syllable at the beginning of each word will indicate this.

Town, village. Generally speaking, the same word is given as for house, or it is rendered "many houses." In New Mexico, *pueblo* would have a different meaning from the habitations of the wild tribes.

Warrior. Among the tribes of the Pacific coast, where there is no distinctive class of warriors, this is frequently rendered "strong man," "quarrelsome," &c.

Friend is a word of very indefinite meaning. Instead of it, "cousin," or "one liked," will often be given.

Sun and *moon.* Curiously enough, these, among several tribes, bear the same name and are actually supposed to be the same. Others use for moon "night sun."

The Seasons. These words have been retained, though it is questionable if they have a very definite signification with Indians. The names of particular months, or "moons," warm or cold weather, or the periods in which particular occupations are followed probably, in most cases, replace them.

River, lake. For these simply the word "water" will often be given, as, among tribes of limited range, their own river or lake is "the water" which they best know.

Mountain. "Rock" is frequently the translation. Some tribes, again, apply a special name to snow peaks.

The colors. The idea of color seems to be indistinct, dark blue and dark green having, in many languages, the same name as black, and yellow the same as light green.

Old and *young.* Care should be taken that the words for "old man," "young man," are not supplied; or, on the other hand, "worn out," and "new," as is often the case.

Alive is frequently rendered "not dead."

Cold, warm. Here, again, caution is requisite, as cold or warm weather may be given instead.

Yesterday and *to-morrow.* In some languages, a single word is used for both, the distinction being made only by the connection.

Numerals. Many tribes go no farther in counting than ten, and among those of California, it is said, some have no names for numbers beyond five. Others, on the contrary, have different sets of numerals, or rather their numerals have different terminations, one class being used in ordinary counting, the other applying to men, money, &c.

Pronouns. The personal pronouns are of two classes, one simple or absolute, the other variously called fragmentary and copulative. These last are used only in composition, as in the form of prefixes and suffixes to the verbs.

Verbs. It is a matter of dispute whether the Indian verb has any true infinitive mood, as "to go," "to eat," &c., and its simplest form appears to be, in all cases, the third person singular present, "he goes," "he eats." It will be better, therefore, to obtain either this form or that of the first person, "I go," &c. The last will be found often to be combined with the copulative pronoun.

ORTHOGRAPHY.

It is, of course, essential to the proper understanding by others of the words collected, especially in view of general comparisons, that a precise and fixed system of spelling should be used, and this is more so where the usual language of the collector is English than where French or Spanish, as there is far less certainty in the pronunciation of the first than of these last. In English, for instance, four different sounds are given as belonging to the letter *a*, viz. : those in *far*, *fall*, *fat*, *fate*. As regards the simple vowels, the difficulty can be partly remedied by employing the Spanish or Italian sounds, as given below, and a further advantage will be found in separating the words into syllables and marking the principal one with an accent, thus. *Da-ko'-ta*. There are, however, in every language, sounds peculiar to itself, and the different Indian tongues abound in them, many being almost beyond our capacity to imitate and certainly to write, without some addition to the ordinary alphabet. Various systems, contemplating a universal alphabet, or one applicable to all languages, have been devised, each having its peculiar merits ; but the great difficulty, never fully overcome, has been to represent intelligibly such unfamiliar sounds without confusing the inquirer with new characters or numerous marks, or, again, by employing several letters to represent a single sound. The alphabet here recommended for adoption, without pretending to remedy these defects, will at least prove an assistance to the collector in the field. Should it be necessary to repre-

sent other sounds, not included below, it will be better for him to adopt some arbitrary mark of his own, describing fully its value or meaning.

VOWELS.

A	as long in <i>father</i> , and short in German <i>hat</i> (nearly as in English <i>what</i>).
E	as long in <i>they</i> ("long a" in <i>face</i>), short in <i>met</i> .
I	" " " <i>marine</i> , short in <i>pin</i> .
O	" " " <i>go</i> , short in <i>home</i> , <i>whole</i> (as generally pronounced in the northern States).
U	as long in <i>rule</i> (<i>oo</i> in <i>fool</i>), short in <i>full</i> (<i>oo</i> in <i>good</i>). <i>U</i> as in <i>union</i> , <i>pure</i> , &c. ; to be written <i>yu</i> .
Ä	as in <i>all</i> (<i>aw</i> , <i>au</i> in <i>bawl</i> , <i>taught</i>).
Ä	" " <i>fat</i> .
Ü	" " <i>but</i> (<i>o</i> in <i>love</i> , <i>oo</i> in <i>blood</i>).
AI	" " <i>aisle</i> ("long i" in <i>pine</i>).
AU	as <i>ow</i> in <i>now</i> , <i>ou</i> in <i>loud</i> .

The distinction of long and short vowels to be noted, as far as possible, by the division into syllables, joining a following consonant to a short vowel, and leaving the vowel open if long. Where this is insufficient, or where greater distinctness is desirable, a horizontal mark above, to indicate a long vowel, a curved mark a short one, thus : *ā*, *ǎ*, *ē*, *ě*, &c. A nasal syllable, like those found so commonly in French, to be marked by an index, *n*, at the upper right-hand corner of the vowel ; thus *oⁿ*, *āⁿ*, *aⁿ*, *uⁿ*, will represent the sounds of the French *on*, *an* or *en*, *in*, and *un*, respectively.

CONSONANTS.

B	as in English <i>blob</i> .
C	not to be used excepting in the compound <i>ch</i> ; write <i>k</i> for the hard sound, <i>s</i> for the soft.
D	as in English <i>did</i> .
F	" " " <i>fife</i> .
G	" " " <i>gig</i> , never for the soft sound, as in <i>ginger</i> ; for this use always <i>j</i> .
H	as in English <i>how</i> , <i>hoe</i> , <i>handle</i> .
J	" " " <i>judge</i> .
K	" " " <i>kick</i> .

L	as in English <i>lull</i> .
M	" " " <i>mimic</i> .
N	" " " <i>noon</i> .
P	" " " <i>pipe</i> .
Q	not to be used : for <i>qu</i> write <i>kw</i> .
R	as in English <i>rear</i> .
S	" " " <i>sauce</i> .
T	" " " <i>tight</i> .
V	" " " <i>vow</i> .
W	" " " <i>wayward</i> .
X	not to be used : write <i>ks</i> or <i>gz</i> , according to the sound, in <i>wax</i> , <i>example</i> .
Y	as in English <i>you</i> , <i>year</i> .
Z	" " " <i>zeal</i> , <i>buzz</i> .
S	as <i>ng</i> in English, <i>singing</i> .
SH	as in English <i>shall</i> , <i>shoe</i> .
ZH	as <i>z</i> in <i>azure</i> , <i>s</i> in <i>fusion</i> .
CH	as in English <i>church</i> .
TH	" " " <i>thin</i> , <i>truth</i> .
DH	as <i>th</i> in <i>the</i> , <i>with</i> .
KH	a surd guttural aspirate, the German <i>ch</i> in <i>ack</i> , <i>loch</i> , <i>buch</i> , and sometimes approaching that in <i>ich</i> , <i>recht</i> , <i>bücher</i> .
GH	a sonant guttural aspirate (Arabic <i>ghain</i>); other compounds, like the clucks occurring in Chinook, &c., to be represented by <i>kl</i> , <i>tkl</i> , <i>tlk</i> , &c., according to their analysis.

COMPARATIVE VOCABULARY.

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
1 man	1 hombre
2 woman	2 mujer
3 boy	3 muchacho
4 girl	4 muchacha
5 infant	5 niño ó niña.
6 my father (said by son)	6 mi padre (dice el hijo)
7 my father (said by daughter)	7 mi padre (dice la hija)
8 my mother (said by son)	8 mi madre (dice el hijo)
9 my mother (said by daughter)	9 mi madre (dice la hija)
10 my husband	10 mi marido
11 my wife	11 mi esposa
12 my son (said by father)	12 mi hijo (dice el padre)
13 my son (said by mother)	13 mi hijo (dice la madre)
14 my daughter (said by father)	14 mi hija (dice el padre)
15 my daughter (said by mother)	15 mi hija (dice la madre)
16 my elder brother	16 mi hermano mayor
17 my younger brother	17 mi hermano menor
18 my elder sister	18 mi hermana mayor
19 my younger sister	19 mi hermana menor
20 an Indian	20 Indio
21 people	21 gente
22 head	22 cabeza
23 hair	23 pelo
24 face	24 cara
25 forehead	25 frente
26 ear	26 oreja
27 eye	27 ojo
28 nose	28 nariz
29 mouth	29 boca

COMPARATIVE VOCABULARY.

FRENCH.	LATIN.
<i>Nom de la tribu.</i>	<i>Nomen nationis.</i>
1 homme	1 vir, homo
2 femme	2 mulier
3 garçon	3 puer
4 fille	4 puella
5 enfant	5 infans
6 mon père (dit le fils)	6 pater meus (dicit filius)
7 mon père (dit la fille)	7 pater meus (dicit filia)
8 ma mère (dit le fils)	8 mater mea (dicit filius)
9 ma mère (dit la fille)	9 mater mea (dicit filia)
10 mon mari	10 sponsus meus
11 mon épouse	11 uxor mea
12 mon fils (dit le père)	12 filius meus (dicit pater)
13 mon fils (dit la mère)	13 filius meus (dicit mater)
14 ma fille (dit le père)	14 filia mea (dicit pater)
15 ma fille (dit la mère)	15 filia mea (dicit mater)
16 mon frère aîné	16 frater meus natu major
17 mon frère cadet	17 frater meus natu minor
18 ma sœur aînée	18 soror mea natu major
19 ma sœur cadette	19 soror mea natu minor
20 sauvage	20 Indus
21 peuple	21 populus
22 tête	22 caput
23 cheveux	23 crinis
24 figure	24 facies
25 front	25 frons
26 oreille	26 auris
27 œil	27 oculus
28 nez	28 nasus
29 bouche	29 os

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
30 tongue	30. lengua
31 teeth.	31 dientes
32 beard	32 barba
33 neck	33 cuello
34 arm	34 brazo
35 hand	35 mano
36 fingers	36 dedos
37 thumb	37 dedo pulgar
38 nails	38 uñas
39 body	39 cuerpo
40 chest	40 pecho
41 belly	41 barriga
42 female breasts	42 pechos de mujer
43 leg	43 pierna
44 foot	44 pié
45 toes	45 dedos del pié
46 bone	46 hueso
47 heart	47 corazon
48 blood	48 sangre
49 town, village	49 pueblo, villa, aldea
50 chief	50 jefe
51 warrior	51 guerrero
52 friend	52 amigo
53 house	53 casa
54 skin lodge	54 casa de cueros
55 kettle	55 caldera
56 bow	56 arco
57 arrow	57 flecha
58 axe, hatchet	58 hacha
59 knife	59 cuchillo
60 canoe	60 canoa
61 moccasins	61 zapatos Indios
62 pipe	62 pipa

FRENCH.	LATIN.
<i>Nom de la tribu.</i>	<i>Nomen nationis.</i>
30 langue	30 lingua
31 dents	31 dentes
32 barbe	32 barba
33 cou	33 collis
34 bras	34 brachium
35 main	35 manus
36 doigts	36 digiti
37 ponce	37 digitus pollex
38 ongles	38 ungues
39 corps	39 corpus
40 poitrine	40 sternum
41 ventre	41 venter
42 mamelles	42 ubera
43 jambe	43 crus
44 pied	44 pes
45 doigts du pied	45 digiti pedis
46 os	46 os
47 cœur	47 cor
48 sang	48 sanguis
49 bourg, village	49 oppidum, pagus
50 capitaine	50 dux
51 guerrier	51 miles
52 ami	52 amicus
53 maison	53 domus
54 loge de peaux	54 tentorium e pellibus
55 chaudière	55 lebes
56 arc	56 arcus
57 flèche	57 sagitta
58 hache	58 ascia
59 couteau	59 culter
60 canot	60 scapha Indica
61 souliers de sauvage	61 calceamenta Indica
62 pipe	62 tubus nicotianus

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
63 tobacco	63 tabaco
64 sky	64 cielo
65 sun	65 sol
66 moon	66 luna
67 star	67 estrella
68 day	68 día
69 night	69 noche
70 morning	70 mañana
71 evening	71 tarde
72 spring	72 primavera
73 summer	73 verano
74 autumn	74 otoño
75 winter	75 invierno
76 wind	76 viento
77 thunder	77 trueno
78 lightning	78 relámpago
79 rain	79 lluvia
80 snow	80 nieve
81 fire	81 fuego
82 water	82 agua
83 ice	83 hielo
84 earth, land	84 tierra
85 sea	85 mar
86 river	86 río
87 lake	87 lago
88 valley	88 valle
89 prairie	89 llano
90 hill, mountain	90 cerro, montaña
91 island	91 isla
92 stone, rock	92 piedra, roca
93 salt	93 sal
94 iron	94 hierro
95 forest	95 bosque, selva

FRENCH.	LATIN.
<i>Nom de la tribu.</i>	<i>Nomen nationis.</i>
63 tabac	63 nicotianum
64 ciel	64 cælum
65 sol	65 sol
66 lune	66 luna
67 étoile	67 stella
68 jour	68 dies
69 nuit	69 nox
70 matin	70 tempus matutinum
71 soir	71 vesper
72 printemps	72 ver
73 été	73 æstas
74 automne	74 autumnus
75 hiver	75 hibernus
76 vent	76 ventus
77 tonnerre	77 tonitru
78 éclair	78 fulgur
79 pluie	79 pluvium
80 neige	80 nix
81 feu	81 ignis
82 eau	82 aqua
83 glace	83 glacies
84 terre	84 terra
85 mer	85 mar
86 fleuve, rivière	86 flumen
87 lac	87 lacus
88 vallée	88 vallis
89 prairie	89 pratium
90 côte, montagne	90 collis, mons
91 île	91 insula
92 pierre, roche	92 petra, saxum
93 sel	93 sal
94 fer	94 ferrum
95 forêt	95 sylvia

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
96 tree	96 árbol
97 wood	97 madera
98 leaf	98 hoja
99 bark	99 corteza
100 grass	100 zacate
101 pine	101 pino
102 maize	102 mais
103 squash	103 calabaza
104 flesh, meat	104 carne
105 dog	105 perro
106 buffalo	106 bisonte, búfalo
107 bear	107 oso
108 wolf	108 lobo
109 fox	109 zorra
110 deer	110 ciervo
111 elk	111
112 beaver	112 castor
113 rabbit, hare	113 conejo
114 tortoise	114 tortuga
115 horse	115 caballo
116 fly	116 mosca
117 mosquito	117 mosquito
118 snake	118 culebra, serpiente
119 rattlesnake	119 culebra de cascabel
120 bird	120 ave
121 egg	121 huevo
122 feathers	122 plumas
123 wings	123 alas
124 goose	124 ganso
125 duck (mallard)	125 pato
126 turkey	126 pavo, guanajo
127 pigeon	127 pichon
128 fish	128 pez

FRENCH.	LATIN.
<i>Nom de la tribu.</i>	<i>Nomen nationis.</i>
96 arbre	96 arbor
97 bois	97 lignum
98 feuille	98 folium
99 écorce	99 cortex
100 herbe	100 herba
101 pin	101 pinus
102 maïs	102 zea maiz
103 citrouille	103 cucurbitus
104 chair	104 caro
105 chien	105 canis
106 buffle	106 bison, bos americanus
107 ours	107 ursus
108 loup	108 lupus
109 renard	109 vulpes
110 cerf	110 cervus
111 élan	111 cervus canadensis
112 castor	112 castor
113 lapin, lièvre	113 lepus
114 tortue	114 testudo
115 cheval	115 equus
116 mouche	116 musca
117 maringouin	117 culex
118 serpent	118 serpens
119 serpent à sonnettes	119 crotalus
120 oiseau	120 avis
121 œuf,	121 ovum
122 plumes	122 plumæ
123 ailes	123 alæ
124 oie	124 anser
125 canard	125 anas boschas
126 dindon	126 pavo
127 tourte	127 columba
128 poisson	128 piscis

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
129 salmon	129 salmon
130 sturgeon	130 esturion
131 name	131 nombre
132 white	132 blanco
133 black	133 negro
134 red	134 colorado
135 light blue	135 azul celeste
136 yellow	136 amarillo
137 light green	137 verde
138 great, large	138 grande
139 small, little	139 pequeño
140 strong	140 fuerte
141 old	141 viejo
142 young	142 joven
143 good	143 bueno
144 bad	144 malo
145 dead	145 muerto
146 alive	146 vivo
147 cold	147 frio
148 warm, hot	148 caliente
149 I	149 yo
150 thou	150 tú
151 he	151 él
152 we	152 nosotros
153 ye	153 vosotros
154 they	154 ellos
155 this	155 este
156 that	156 aquel
157 all	157 todo, todos
158 many, much	158 mucho, muchos
159 who	159 quien
160 far	160 lejos
161 near	161 cerca de

FRENCH.		LATIN.	
<i>Nom de la tribu.</i>		<i>Nomen nationis.</i>	
129	saumon	129	salmo
130	esturgeon	130	sturio
131	nom	131	nomen
132	blanc	132	albus
133	noir	133	niger
134	rouge	134	rubrum
135	bleu	135	cæruleum
136	jaune	136	amarillis
137	vert	137	viridis
138	grand	138	magnus
139	petit	139	parvus
140	fort	140	fortis
141	vieux	141	vetus
142	jeune	142	juvenis
143	bon	143	bonus
144	mauvais	144	malus
145	mort	145	mortuus
146	vivant	146	vivus
147	froid	147	frigidus
148	chaud	148	calidus
149	je	149	ego
150	tu	150	tu
151	il	151	ille
152	nous	152	nos
153	vous	153	vos
154	ils	154	illi
155	ceci	155	iste
156	cela	156	ille
157	tout, tous	157	omnis, totus
158	beaucoup	158	multus
159	qui	159	qui
160	loin	160	longe
161	près	161	prope

ENGLISH.	SPANISH.
<i>Name of tribe.</i>	<i>Nombre de la tribu.</i>
162 here	162 aquí
163 there	163 allá
164 to-day	164 hoy
165 yesterday	165 ayer
166 to-morrow	166 mañana (el día de)
167 yes	167 sí
168 no	168 no
169 one	169 uno
170 two	170 dos
171 three	171 tres
172 four	172 cuatro
173 five	173 cinco
174 six	174 seis
175 seven	175 siete
176 eight	176 ocho
177 nine	177 nueve
178 ten	178 diez
179 eleven	179 once
180 twelve	180 doce
181 twenty	181 veinte
182 thirty	182 treinta
183 forty	183 cuarenta
184 fifty	184 cincuenta
185 sixty	185 sesenta
186 seventy	186 setenta
187 eighty	187 ochenta
188 ninety	188 noventa
189 one hundred	189 ciento
190 one thousand	190 mil
191 to eat	191 comer
192 to drink	192 beber
193 to run	193 correr
194 to dance	194 bailar

FRENCH.		LATIN.	
<i>Nom de la tribu.</i>		<i>Nomen nationis.</i>	
162	ici	162	hic
163	là	163	illuc
164	aujourd'hui	164	hodie
165	hier	165	heri
166	demain	166	cras
167	oui	167	ita
168	non	168	minime
169	un	169	unus
170	deux	170*	duo
171	trois	171	tres
172	quatre	172	quatuor
173	cinq	173	quinque
174	six	174	sex
175	sept	175	septem
176	huit	176	octo
177	neuf	177	novem
178	dix	178	decem
179	onze	179	undecim
180	douze	180	duodecim
181	vingt	181	viginti
182	trente	182	triginta
183	quarante	183	quadraginta
184	cinquante	184	quinguinta
185	soixante	185	sexaginta
186	soixante-dix	186	septuaginta
187	quatre-vingts	187	octoginta
188	quatre-vingt-dix	188	nonaginta
189	cent	189	centum
190	mille	190	mille
191	manger	191	edere
192	boire	192	bibere
193	courir	193	currere
194	danser	194	saltare

ENGLISH.		SPANISH.	
<i>Name of tribe.</i>		<i>Nombre de la tribu.</i>	
195	to sing	195	cantar
196	to sleep	196	dormir
197	to speak	197	hablar
198	to see	198	ver
199	to love	199	amar
200	to kill	200	matar
201	to sit	201	sentarse
202	to stand	202	estar en pié
203	to go	203	ir
204	to come	204	venir
205	to walk	205	andar
206	to work	206	trabajar
207	to steal	207	robar
208	to lie	208	mentir
209	to give	209	dar
210	to laugh	210	reir
211	to cry	211	gritar

FRENCH.		LATIN.	
<i>Nom de la tribu.</i>		<i>Nomen nationis.</i>	
195	chanter	195	cantare
196	dormir	196	dormire
197	parler	197	loqui
198	voir	198	videre
199	aimer	199	amare
200	tuer	200	cædere
201	s'asseoir	201	sedere
202	se tenir debout	202	stare
203	aller	203	ire
204	venir	204	venire
205	marcher	205	ambulare
206	travailler	206	operari
207	voler	207	furare
208	mentir	208	mentiri
209	donner	209	dare
210	rire	210	ridere
211	crier	211	clamare

INSTRUCTIONS
RELATIVE TO THE
ETHNOLOGY AND PHILOLOGY OF AMERICA.

APPENDIX A.

PHYSICAL CHARACTER OF THE INDIAN RACES.

INVESTIGATIONS are now being made into the physical character of the soldiers composing the armies of the United States, embracing a large number of measurements of different parts of the body, designed to ascertain the effect of climate, locality, and mode of life upon men, the average size and proportions of troops of the United States as compared with those of foreign countries, and those of the different States as compared with each other.

In connection with this inquiry it is deemed a matter of interest to extend the examination to the Indian tribes of America, and to ascertain the proportions of the aboriginal races as compared with those of European descent, and also the effects of different food, climate, and mode of life upon the various tribes of the former.

The measurements selected for this purpose are, for various reasons, limited to a smaller number than in the case of the army, and with the exception of that of weight, which as being variable is of the least consequence, are such as can be taken with a tape-measure. They should be made with great care in feet, inches, and tenths of an inch.

Persons familiar with the Indians are aware that a great difference exists in the complexion, not merely of individuals, but of tribes. In some cases that peculiar reddish tinge of the skin which has given to the race the name of "Red" or "Copper-colored Men" is predominant and marked; in others a light brown is the more common; again, a yellowish or somewhat orange hue exhibits itself; and, finally, some approach nearly to black. Among the lighter-colored the red often shows in the

cheek. Nor are these diversities due altogether to climate or exposure. There seem to be well authenticated instances in which food also influences complexion. Thus it is said that among the Chepewyan tribes of British America, the Cariboo or Reindeer eaters are much darker than the cognate tribes who live on fish, and this, too, although they inhabit a far northern latitude. The texture of the skin is a noticeable feature. That of the younger Indians, where it can be perceived through the dirt, is usually exceedingly soft and delicate, but becomes wrinkled with middle age. An important difference in the color of the hair also occasionally shows itself. For instance, the Indians of the Nooksahk tribe, in the neighborhood of Mount Baker, Washington Territory, have often light-brown and even flaxen hair in youth, which, however, grows dark with age, and yet their blood is unmixed. When neglected and exposed to the sun the hair becomes of a rusty hue, and like that of whites loses its gloss. Among some of the Pueblo tribes of New Mexico albinos are not uncommon. Hazel eyes are frequent among the Indians of the lower Klamath.

Particular information should be given as to their food, whether consisting of game, fish, maize, roots, &c., and even as to the kinds of either, whether of buffalo, elk, deer, or cariboo, of salmon or other varieties of river fish, or of the various animal productions of the sea, such as the whale, walrus, seals, &c., as among the Esquimaux and some of the Northwest Coast Indians.

Their mode of life will, of course, influence the development of the form. Among the tribes who live almost altogether on horseback, or in canoes, we may expect to see the legs comparatively small, while in the latter the arms will be proportionately large. Among the mountain tribes, on the other hand, the legs will be more muscular and the chest expanded. As a general rule their limbs are rounded, and the separate muscles are not developed as in the white and black races. As to this, observations are requested.

The age of Indians it is very difficult, in most cases impossible, to ascertain, as they keep no record even in memory. An estimate founded on careful observation will, however, afford a reasonable approximation. Sometimes a reference to a known event as having occurred when they were of the size of some young boy will afford a guide. As the men usually marry young,

the age of their families furnishes often another. A great age, notwithstanding apparent decrepitude, is very rarely attained, especially by the male sex.

In the case of mixed breeds it is by all means desirable to ascertain and state whether either one or both parents were themselves mixed, and, if so, to what degree. Any observations on the comparative physical development, health, and length of life among the mixed breeds will be very gladly received.

Where the inquiry is made by medical men, other points will naturally suggest themselves. Among them, it will be well to ascertain the number of regular pulsations and respirations per minute.

It is hardly necessary to add that these measurements should be confined to adult males. Observations on boys who have not attained their growth would have no value.

PARTICULARS OF INQUIRY.

In order to avoid the necessity of transcribing the questions, references may be made to the numbers and letters. Separate tables in quarto have been prepared, and will be furnished on application to the Smithsonian Institution.

1. Name of Indian.
2. Name of tribe.
3. If of mixed blood, in what proportion?
4. Country occupied by tribe.
5. Mode of subsistence, whether by
 hunting, fishing, &c. Habits, }
 whether used to riding, foot, or }
 canoe travel. }
6. Articles of usual food.
7. Age (by estimation) between 20 }
 and 30, 30 and 40, &c. }
8. State of general health.
9. Weight in lbs. and half lbs.
10. General complexion, whether red- }
 dish, brown, yellowish, or black. }

11. Hair, color of.
12. Eyes, color of.
 - a. Whether oblique or not.
 - b. Distance between outer angles }
over root of nose.
13. Teeth.
 - a. How many are lost?
 - b. Are they much ground down }
by hard food?
 - c. Do the opposing incisor teeth }
of the two jaws rest on each }
other, do they overlap?
14. Entire height without shoes.
15. Head.
 - a. Largest circumference around.
 - b. Distance between orifices of }
ears over top of head.
 - c. Distance from root of nose over }
top of the head to base of }
skull.
16. Arm.
 - a. Length outside from point of }
shoulder cap to tip of mid- }
dle finger.
 - b. Length from same to point of }
elbow when bent.
 - c. Length from point of elbow to }
lower end of ulna.
 - d. Length from lower end of ulna }
to tip of middle finger.
 - e. Largest girth of arm.
 - f. Largest girth of forearm.
 - g. Largest girth of hand.
17. Distance from upper centre of breast }
bone to end of middle finger, arm }
extended.
18. Breadth of shoulders behind.
19. Girth of neck.

20. Girth of chest around nipples.
 - a. With full inspiration.
 - b. After expiration.
21. Girth of waist.
22. Girth around hips on level with the }
head of the thigh bones. }
23. Leg.
 - a. Height from ground to top of }
hip-bone, outside. }
 - b. Height to knee-joint outside.
 - c. Height to crotch inside.
 - d. Largest girth of thigh.
 - e. Largest girth of leg.
24. Foot.
 - a. Length from tip of great toe }
to extremity of heel. }
 - b. Girth of instep.
 - c. Girth around heel and instep.

INSTRUCTIONS

RELATIVE TO THE

ETHNOLOGY AND PHILOLOGY OF AMERICA.

APPENDIX B.

NUMERAL SYSTEMS.

IN the original circular of "Instructions" allusion was made to the fact that some of the Indian tribes use different sets of numerals, or rather modifications of the numerals, as applied to different objects. This fact, in connection with the various serial systems upon which their enumeration is based, presents a subject worthy of particular inquiry, the more especially as the same singularity exists among other distant and distinct barbarous nations.

Mr. Gallatin in his "Notes on the Semi-Civilized Nations of Mexico," &c., published in the Transactions of the American Ethnological Society (vol. ii. p. 54, et seq.), says: "Another peculiarity of the Mexican and Maya, and of which traces may be seen in other languages of the same group, is the alteration which the numerals undergo according to the nature of the object to be counted. The distinctions are not always easy to be understood; and the objects of the same class, that is to say in counting which the same altered numeral is used, are apparently of the same incongruous nature. Those stated by Father Alonzo de Molina for the Mexican language, are as follows:—

1	ce, cem	6	chica-ce
2	ome	7	chic-ome
3	yey	8	chic-uey
4	naui	9	chicu-naui
5	macuilli	10	mat-lactli

20 cem-poualli "

May, 1865.

(40)

I have excerpted only the first ten numerals and the word for twenty from Mr. Gallatin's Table A. He proceeds:—

"The numerals as laid down in Table A. are used in counting animated beings, mantas, mats, paper, tortillas, ropes, skins, canoes, cycles, knives, and candles; but in counting several of these, the word *pilli* and sometimes *quimilli*, is substituted for *poualli* (20).

"The syllable *tell* is added to the numerals, and these lose their last syllable (*mallactell* for *mallacti*, *cem-poualtell* for *cem-poualli*) when counting fowls, eggs, cocoa, jars, frijoles, fruits, roots, rolls, or round things.

"The word *panlli* is added to the numeral when speaking of ridges made by the plough, of walls, files of men, and of other things arranged in length.

"*Tlementli* is added to the numeral when speaking of speeches, dishes, bags, shields, or when a thing is doubled above another, or when speaking of things differing one from the other."

No reference to such a system is to be found in the Grammatical sketch of the HEVE, translated by Mr. Buckingham Smith (No. III of Shea's Linguistics); in the Nevome Grammar (*ibid.* No. V), the mutsun of Father Arroyo (*ib.* No. IV), or Father Sitjars vocabulary of the San Antonio (*ib.* No. VII), the only extended works at present accessible on the languages of Sonora and California, but it is very possible that it may exist there and have escaped notice.

In Father Pandosy's Grammar of the Yakama, a Sahaptin language of Washington Territory (Shea's Linguistics, No. V), the numerals are not specially referred to; but in the accompanying dictionary *metat* is given for three, *metao*, three persons; *pinept* for four, *pinapo* four persons; *parat* five, *par-nao*, five persons, and other numerals are given in duplicate or triplicate without explanation.

Father Mengarini, in his Grammar of the Selish, or Flathead of the Rocky Mountains (Shea, No. II.), says of the cardinal numbers, "they are duplex, one set relating to things, the other to persons, thus:—"

<i>Relating to things.</i>	<i>Relating to persons.</i>
1 nko	schnaksi
2 esèl	chesèl
3 chèlès	ch'chèlès
4 mús	ch'músms
5 zil	ch'zilzil
6 tàckan	ch'tackan
7 sispel	ch'sispel
8 hèhènem	ch'hèhènem
9 ganút	ch'ganut
10 open	ch'open

Similar changes exist in other dialects of the Selish, of which the following from the Nisqually will serve as an instance:—

<i>Applied to men.</i>	<i>Applied to money.</i>
1 dut-cho	che-élts
2 sale	sla-élts
3 klekhw	kle-hwélts
4 bōs	bōs-élts
5 tsa-lats	tslat-sélts
6 dze-lá-chi	dzlatch-élts
7 tsōks	tsok-sélts
8 t'ká-chi	t'ka-chi-élts
9 hwul	hwul-élts
10 pa-duts	pa-dats-élts
20 sa-lá-chi	

Zeisberger in his "Grammar of the Language of the Lenni-Lenape, or Delaware Indians" (Trans. Am. Phil. Soc., N. S., vol. iii), gives the list of numerals, without stating its application, as follows:—

1 ngutti	6 guttasch
2 nisha	7 nischasch
3 nacha	8 chasch
4 newo	9 peschkouk
5 palenach	10 tellen

And then adds the following, used in respect to inanimate objects, as towns, rivers, houses, &c. *

Mawal, ngutti, one, only one, and in the plural, *nischenol*, two, *nachenol*, three, &c., concerning which he observes, "When men, animals, or other things are spoken of, which among the

Indians are considered as belonging to the animated class of beings, they say: *mauchsa*, *mayauchsu*, one person, or a person, or living being. It is truly incorrect to say *ngutti lenno*, a man. And in the plural, *nischowak lennowak*, two men, &c.

All and *ak*, the terminations of these last in the plural, are respectively applied, the former to inanimate, the latter to animate objects. But as exceptions, it is stated that among nouns, trees and the larger plants are considered animate, while fishes take the inanimate termination. It is thus evident that a similar idea has governed the form of the numeral adjective in the Delaware and the Mexican.

Other examples among the North American languages might be cited, but the above are sufficient to indicate the object of inquiry. The system appears, however, not to have been universal, as, according to Dr. Wilson, there is no distinction of numerals in the Seneca or other Iroquois languages.

Singularly enough, the same idea prevails in the numerals of other and far distant races, of which a few specimens may be useful.

The Hon. John Pickering, in "Memoirs of the American Academy," N. S., vol. ii, gives an account of the language and inhabitants of Tobí, or Lord North's Island, in the Indian Archipelago, derived from an American seaman, Horace Holden, who spent two years upon it. This island is situated about lat. 3° 2' north and lon. 131° 4' east, and is of very small extent and sparsely inhabited. The different forms of the digits are thus given in the accompanying vocabulary:—

<i>General cardinals.</i>	<i>For cocoanuts.</i>	<i>For fish.</i>
1 yat	su	simul
2 guh-lu	guó	gwimul
3 ya	sarú	srimul
4 van	vao	vamul
5 ni	limó	nimul
6 wör	waru	wawrimul
7 vish	vishu	vishi-emul
8 wawr	tiu (?)	wawrimul
9 tiú	(wanting)	tuimul
10 se or sek	sek	sek

He adds, however, that in counting out fish, they proceed by pairs or couples, as, two, four, six, &c.

In counting *fish hooks*, they use still a different set of numerals, which were not recollected. It would appear further that stones, birds, and days were counted by the same numerals as cocoanuts, and men and women by those employed to enumerate fish.

Mr. Hale, in the "Ethnography, &c., of the U. S. Exploring Expedition," copies Holden's vocabulary, which is also appended to a narrative of his captivity, published at Boston.

Dr. L. H. Gulick, in his notes on the Grammar of the Ponape dialect (12mo. Honolulu, 1858, pp. 39), states that "the enumeration of all objects is alike as far as *nine*, after which there is a singular variety." The difference is in—

"I. The mode of counting all animated objects, and all kinds of sticks and timbers, and everything that to a native is connected in idea with separate sticks, as trees, canoes, &c.

"II. The enumeration of yams, taro, and a few of the most costly articles.

"III. The numbering of cocoanuts, bread-fruits, eggs, shells, stones, &c., in fact, probably, of all common, least valued objects, not included under the first head."

Examples are given, not necessary to repeat here, as also of peculiarities in the numerative particles.

The Island of Ponape, Paanopa, or, as written by Mr. Hale, Bonabe, is one of the central islands of Micronesia. That gentleman gives also a vocabulary of the language of Taputeoua, in the Kingsmill group, one of the most eastern, and separated from Tobi by 2600 miles. Speaking of the numerals, he says that the natives furnished the expedition with several sets or classes, which he conjectured were used in counting objects of different kinds, though he had no means of obtaining from them any explanation. There were five of them in all, and all given in the digits, or from one to ten.—Eth. of Ex. Exp. p. 440.

Leaving Micronesia for Polynesia, Mr. Hale states that some of the terms for the higher numbers are only used in counting particular articles. For *four*, the Hawaiians, for instance, have two terms, *ha* and *tauna*. For *forty*, they have *tanahā*, *iato*, and *ta'au*. The first of these, *tanahā*, is the general term; *iato* is used in counting pieces of *tapa* (native cloth), and *ta'au* in counting fish. (Ib. p. 250.)

It is remarkable that thus, in Tobi and Taputeoua, the distinction should extend to all the digits; and in Ponape, which

is between the two, and Hawaii, distant 3500 miles, it should be confined to the higher numbers.

The last example here presented is from Bowen's Yoruba Dictionary, in the 10th vol. Smithsonian Contributions. In this, an African Language, traces of the same system also appear. Thus in ordinary counting the first vowel is short, while among what the author terms "cardinals of price," up to forty, the vowel is long; thus *okay*, one, *edzi*, two; *okay*, *edzi*. The reason given for this is that the latter are contractions of *owó-kay*, *owó-edzi*, i. e. one cowrie, two cowries, &c.

It thus appears that this peculiar arithmetic is of wide distribution, and by no means confined to a single or even to cognate races. A more perfect knowledge of barbarian languages would probably show its still greater extension. In what process of the human mind it has its origin, and the reasons for the singular collocation of objects which different tribes embrace in the several forms of the numerals, are questions of curious speculation.

The division of objects into animate and inanimate, or, as they have been termed by other writers, noble and ignoble, is a well-known feature in several of the languages of North America. Mr. Howse states that the Cree and Chippeway (Ojibwa) nouns are divisible into two classes, animate and inanimate, analogous to gender in European languages, but that many inanimate nouns, from possessing some real or imaginary excellence, are personified as animates. Perhaps a clue to this may be found in the pantheism, or rather pan-demonism of the Indian mythology. The Indians of Oregon, for example, believe that not only all animals were once people possessed of supernatural powers, or magicians, but that prominent mountains, isolated rocks, very old trees, and other remarkable objects, were so likewise, a belief which, in fact, seems to have characterized the superstitions of all the tribes of the continent. But, though this might account for a simple division into animate and inanimate, embracing all such objects, it would not explain the multiplicity of forms exhibited in some of the examples above given. The disposition to particularize, and the want of generic terms among barbarous races, may have had some connection with this division, for since to adopt a different system of counting every object would be impossible, the simple desire to be specific may have led to an anomalous form of classification.

The second object in this investigation is to ascertain the series of numbers upon which enumeration is based among different tribes. The most natural, and, among barbarous nations, most common, is the quinary system, or that by fives, corresponding with the fingers of one hand. In this the first five digits are simple, that is to say, are all different; the second form compounds or modifications of these first, as will be seen by referring back to the example given of the Mexican. In many cases, however, it has happened that, in the lapse of time, new words have been adopted for a portion, while the old have become obsolete, or appear only occasionally in combination. In a number of vocabularies examined, it would appear that the numbers 7 and 8 most frequently retain the compound form, and 10 has oftenest changed. The 7 and 8 usually contain the elements of the words 2 and 3, as representing the 2d and 3d fingers on the second hand. Nine is frequently "one less than ten."

Probably in almost all these languages the quinary system was the oldest, and the decimal, where it now exists, has been of subsequent introduction, or rather growth. In the Chinook, for example, the names of the digits are all simple with the exception of that for seven. Thus *makst* two, *sini-makst* seven, *sini* being, perhaps, an obsolete form of five. These obsolete forms are sometimes revealed in the numeral ten and its compounds and multiples. Thus the simple digit ten may have one name, while in eleven= $10+1$, or twenty= 2×10 , the word will be entirely different. In the Napa, of California, *hopen* signifies two, and *ma-ha-ish* ten, but twenty is *hopi-hol*, the other multiples retaining the syllable *hol* up to one hundred, which is *ma-ha-ish sol*, the *h* being changed to *s* for euphony.

Twenty is, in some languages, a translation of *two tens*, in others a distinct word exists, and this is in many the name for head, body, or person, as in the Opata, *seis dosme* (literally one person), signifying, of course, all the fingers and toes of one person. In the Nisqually the word for twenty, *s'ha-lat-chi*, means literally the fingers and toes. As to the other multiples of ten, they are usually expressed by the literal translation of 3×10 , 4×10 , &c. But in the Opata and kindred dialects this form occurs, 20, *seis dosme*; 30, *seis dosme macoi tarewa*, i. e. ten more than one person; 40, *wodun dosme*, or two twenties; 50,

wodun dosme macoi tarewa; 60, *beidum dosme*, three twenties, &c.

A good many anomalous forms occur, unnecessary to repeat here, as, for instance, 2×4 for 8, 2×3 for six.

Besides the quinary and decimal series, the binary and vigintesimal are supposed to be represented.

A sufficient number of extended vocabularies of numerals have not been obtained to admit of a thorough examination and comparison of the different series in use, and the following table has, therefore, been prepared, which will enable the collector to combine both subjects of inquiry in one, the figures having been selected in reference to the latter, and the arrangement in parallel columns to the former. These are headed "Simple Cardinals," "Personal Cardinals," and "Cardinals of Value," merely as a guide, and not as indicating that they will in all cases convey the true idea. It is desired that as careful inquiry as possible should be made into the facts in each one, and that the objects included in the separate classes be enumerated. It is probable that in some languages other columns must be added.

Very few tribes, it will be found, count beyond 100, while some of the more ignorant have no numbers beyond five. It is desirable in all cases, if possible, to ascertain the meaning of the larger collective numbers, as 10, 20, and 100, and another point of inquiry may be the names of the different fingers, especially of the thumb, thus:—

Little finger.

Ring finger.

Middle finger

Fore-finger.

Thumb.

TABLE OF NUMERALS.

	Simple cardinals.	Personal cardinals.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

TABLE OF NUMERALS.

	Cardinals of value.	Other cardinals.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

TABLE OF NUMERALS.

	Simple cardinals.	Personal cardinals.
30		
40		
• 50		
60		
70		
80		
90		
100		

TABLE OF NUMERALS.

	Cardinals of value.	Other cardinals.
30		
40		
50		
60		
70		
80		
90		
100		

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ALPHABETICAL INDEX.

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 Algae of N. Am., 8
 Allen, 6
 Alvord, 1
 Ammonia-Cobalt, 4
 Amphorotheus, 8
 Ampullariidae, 7
 Ancient mining, 5
 Annual reports, 1
 Archæology, 4
 Architecture, 9
 Arctic Seas, 2, 3, 4
 Astronomy, 1
 Aurora Borealis, 3
 Bache, 3
 Bailey, 5
 Baird, 6
 Batis, 8
 Bats of N. Am., 6
 Bibliography, 2
 Bib. of Conchol., 7
 Bib. of Nat. Hist., 2
 Binney, 7, 9
 Birds, Catal. of, 6
 Birds, Review of, 6
 Botany, 8
 Booth, 4
 Bowen, 5
 Brewer, 6
 Bridgeman, Laura, 5
 Carpenter, 7
 Caswell, 2
 Catalogue of Libr., 2
 Catal. of Publica., 2
 Catal. of Transac., 2
 Chappelsmith, 2
 Chelonia, 6
 Chelonia, extinct, 8
 Chemistry, 4
 China, 9
 Coffin, 3
 Coleoptera, 7
 Conchology, 7
 Conchol., Bib. of, 7
 Conosaurus, 8
 Corresp. of S. I., 10
 Conrad, 2
 Cottoids, 6
 Corbiculadæ, 7
 Cretaceous Fossils, 9
 Cretace. Reptiles, 9
 Crustacea, 7
 Dakota Diction., 5
 Darlingtonia, 8
 Davis, 2, 5
 Dean, 6
 Diptera, 8
 Downes, 1
 Draper, 4
 Eclipse of Sun, 2
 Eggs, 6
 Eggleston, 9
 Elec. Rheometry, 4
 Electro-Mag. Tel., 4
 Ellet, 9
 Entomology, 7
 Entophyta, 5
 Entozoa, 5
 Eocene fossils, 9
 Ephem. Neptune, 2
 Ethnology, 4
 Exploring Expe., 7
 Fishes, 6
 Flood Tide, 2
 Force, 3
 Fox (Yacht), 3
 Fremont, 8
 General Series, 1
 Gent, 4
 Geography, Phys., 9
 Geology, 9
 Gibbs, 4, 5
 Gibbes, 8
 Gilliss, 2
 Girard, 6, 9
 Girard College, 3
 Grand Manan, 6
 Grasshoppers, 6
 Gray, 8
 Greenland, 2
 Guyot, 3
 Hagen, 7
 Haldeman, 7
 Hare, 4
 Harvey, 8
 Haven, 4
 Hayden, 9
 Hayes, 4
 Hemiptera, 8
 Hill, 2
 Hitchcock, 9
 Holcodus, 8
 Homoptera, 8
 Hydrobiinæ, 7
 Hymenoptera, 8
 Indian Portraits, 4
 Insects, 7
 Instruc. in Collec., 6
 Instruc. Philology, 5
 Invert. Marine, 6
 Japan, 9
 Jargon, 5
 Jewett, 9
 Jones, 6
 Jurassic Fossils, 9
 Kane, 2
 Lapham, 5
 Lakes, Level of, 2
 Lake Superior, 5
 Lea, 7
 Le Conte, 7
 Lepidoptera, 7
 Libraries, List of, 9
 Leidy, 5, 8, 9
 Lieber, 5
 Loomis, 2
 Locke, 3
 Loew, 8
 Mag. Surveys, 3, 4
 Magnet., Terres., 3
 Mammals, 6
 Mammals, Cat. of, 6
 Mammals, Extinct, 8
 Mathematics, 1
 Mauvaises Terres, 8
 Mayer, 5
 McClintock, 3
 Medulla Oblon., 6
 Meech, 3
 Meek, 9
 Melsheimer, 7
 Meteorology, 2
 Mexico, 4
 Mitchell, 6
 Mitla, 5
 Microscope, 5
 Micros. Science, 5
 Minerals, List of, 9
 Mineralogy, 9
 Miocene fossils, 9
 Miscellaneous, 10
 Miscellane. Collec., 1
 Mississippi Val., 5, 9
 Mitchell, 5
 Mollusks, 7
 Mongolia, 9
 Morehouse, 6
 Morfit, 4
 Morgan, 5
 Morris, 7
 Mosasaurus, 8
 Museum Miscel., 6
 Natural History, 6
 Nebraska, 8
 Neptune, 1, 2
 Nereis Bor.-Am., 8
 Nests, 6
 Neuroptera, 7
 Newcomb, 2
 New Harmony, 2
 New York, 5
 Norton, 8
 Observ., Meteor., 3
 Occultations, 1
 Ohio, 5
 Oligocene Fossils, 9
 Olmos, Peru, 2
 Olmstead, 3
 Oology, 6
 Orthoptera, 8
 Osten Sacken, 8
 Owen, 9
 Ox, Fossil, 8
 Palæontology, 8
 Pennsylvania, 4
 Periodical Photo., 3
 Philology, 4
 Photo. Celestial, 4
 Physics, 4
 Phys. Geography, 9
 Physiology, 6
 Popocatepetl, 4
 Prime, 7
 Providence, 2
 Psychrom. Tables, 3
 Publica. of S. I., 9
 Pulmonata, 7
 Pumpelly, 9
 Rana pipiens, 6
 Rattlesnake, 6
 Reports, Annual, 1
 Reptiles, 6
 Reptiles, Fossil, 9
 Rhees, 9
 Riggs, 5
 Runkle, 2
 Sausure, 8
 Sawkins, 5
 Schott, 2, 3, 4
 Scudder, 8
 Secchi, 4
 Serpents, 6
 Shells, 7
 Shells, Collecting, 6
 Shells, List of, 7
 Sloth, Extinct, 9
 Smith, 2
 Smithsonian. Cont., 1
 Sonntag, 4
 Soundings, 5
 Squier, 5
 Stanley, 5
 Stimpson, 6, 7
 Storms, 2
 Streptomatide, 7
 Sun, Eclipse of, 2
 Sun, Heat of, 3
 Surface Geology, 9
 Tables, Met. & P., 3
 Technology, 4
 Telescope, 4
 Ter Magnetism, 3
 Terres. Physics, 4
 Tiles, 2
 Trapezium, 6
 Tornado, 2
 Torrey, 8
 Tryon, 7
 Turner, 5
 Uhler, 8
 Upper Missouri, 9
 Viviparidæ, 7
 Vocabularies, 5
 Walker, 1, 2, 6
 Washington, Ark., 2
 Whittlesey, 2, 5, 9
 Wiseonsin, 5
 Wright, 8
 Wyman, 6
 Yacht Fox, 3
 Yoruba, 5
 Zoology, 6

